in southwestern Arkansas. The floods in western Montana were caused by heavy rains that fell from June 20 to 23, inclusive, and much damage was done to growing crops, railroads, and bridges. The Red River flood was due to heavy rains over the upper watershed between May 24 and 31, Arthur City, Tex., reporting a fall of 7.20 inches on May 31. The highest stage reached at Fulton, Ark., was 31.5 feet, 3.5 feet above the flood stage, on June 4, and that at Shreveport, La., 26.9 feet, 2.1 feet below the flood stage, on June 13. The first warning, issued on May 27, was to the effect that a stage of 30 feet was probable at Fulton in about five days, and all interested were advised to take steps to protect their property. Supplementary warnings were issued on May 28 and June 2. The failure of the river to reach the flood stage at Shreveport was doubtless due to the comparatively dry condition of the bayous, lakes, and the low country between Fulton and Shreveport, as well as to some breaks in the new levees in the State of Arkansas, south of Fulton.

The losses in crops, principally cotton, are estimated at over $500,000, of which about three-fourths were in Arkansas, and one-fourth in Louisiana north of Shreveport. No levee breaks were reported in Louisiana, but much damage was inevitable as thousand of acres of unprotected lowlands in Louisiana are cultivated. There was no loss of live stock, a very important matter in this section, as the warnings gave all ample time in which to remove all portable property.

The next floods in point of importance were those in some of the Texas rivers. Flood stages were general except in the Brazos and upper Colorado, and considerable damage was done to crops, bridges, etc. Warnings were promptly issued for these floods, and they were highly commended by all interested, especially by those residing along the Trinity River where the floods were most pronounced and persistent.

Heavy rains on June 1 caused a moderate flood in the James River east of Scottsville, Va., for which warnings were issued on June 2. Some docks at Richmond were covered for a time, a few cellars filled, and some meadow lands overflowed, but, aside from the inconvenience, no damage was done, as all movable property had been placed beyond reach of the water. The highest stage reached at Richmond was 14.7 feet, 2.7 feet above the flood stage, on June 3. Another flood of still more moderate character occurred on June 15 and 16 as a result of heavy rains on June 13 over the upper watershed of the James River. The usual warnings were issued, the usual conditions were experienced, and no damage was done.

There were also short floods of a minor character in the lower Roanoke, the Wateree, Santee, lower Wabash, and the Missouri River east of Kansas City, for which warnings were issued at the proper times. The annual rise of the Columbia River ended with a stage of 34.1 feet, 5.9 feet below the flood stage, at The Dalles, Oreg., on June 5, and with a stage of 20 feet, 6 feet above the flood stage, at Vancouver, Wash., from June 5 to 7 and 9 to 11, all inclusive. The highest stage reached at Portland, Oreg., on the Willamette River, was 19.2 feet, 4.2 feet above the flood stage, from June 6 to 8, inclusive, and on June 10.

The highest and lowest water, mean stage, and monthly range at 291 river stations are given in Table VI. Hydrographs for typical points on seven principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississipi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.—*H. C. Frankenfield, Professor of Meteorology.*

SPECIAL ARTICLES, NOTES, AND EXTRACTS.

TORNADO AT WILLS POINT, TEXAS, MAY 25, 1907.

[The following items are copied from the Wills Point (Texas) Chronicle, issued May 30, 1907.]

At 6:20 o'clock Saturday evening [May 25] * * * a tornado past over the eastern portion of Wills Point. Everything in its path was literally destroyed, three lives were taken, twelve people injured, and much property damaged on either side of the route traveled by the tornado

This fury of wind formed about two and a half miles south of the town in the Brown pasture. Parties saw it when it seemed to be but little more than an ordinary whirlwind, but as it moved it increased in size and destructiveness.

This infant giant was first seen south of the Brown big barn. It seemed to follow the course of a ravine for some distance west, then turned north, a little east. Several times it seemed to veer in its course. Had it gone due north from its place of formation it would have gone well to the east of the town; had it proceeded upon the course when it first veered to the west it would have mist the town some distance. As it was it past over the eastern portion of Wills Point. * * *

The tornado moved slowly, as if to deliberately destroy everything in its path, but at the same time give the people ample opportunity to escape. This whirling demon was seen long before it reached the town, and, like the picture of some giant hand with the finger pointing ever toward you, it lookt to each person who saw it as if it were coming directly toward him There was a hasty retreat to storm cellars, and to this fact alone is due the marvelous escape of so many people. As the tornado gradually approached, and as its course was known, hundreds of people watched it; the awe-inspiring scene, with its mighty roar and its whirling black top, as tho a hundred furnaces were in blast at one time, can never be forgotten. The air was filled with débris, and those who watched the progress of the storm did so with bated breath, knowing it was leaving death and destruction in its wake, yet they were powerless to aid. * * *

A heavy rain, accompanied by some hail, preceded the storm, but there was no rain during its passage thru the town, and in a short time after it was comparatively clear. * * *

It was at first generally thought that the storm gathered on the Brown ranch, two and a half or three miles south of town, but the observations of a number of people seem to bear out the idea that it originated much farther south At least it was first seen near the homes of Spikes and Wilson, 6 miles south of town. It was in its infancy there. Parties at the Brown barn saw it also when it was quite small, and it was then thought to have originated there. C. J. Simmons, living a mile and a half west of Myrtle Springs, saw it form from his home. [Myrtle Springs is 11 miles southeast of Wills Point.] It appeared to him to be some 6 miles west of his house, and there seemed to him to be two or three smaller ones that finally united. He described it as having the appearance of a small, black cloud of peculiar aspect rising in the air and whirling rapidly. Each time it rose there would be a long tail to it, but in the whirling that would disappear until it made dips, when the tail would again appear. After several dips and rises and the consolidation of several smaller ones it began to move forward. Mr. Simmons and his brother watched it till it past over Wills Point and out of sight beyond. * * *

Where the fury finally expended itself is not known here. Emory [18 miles northeast of Wills Point] was visited by a tornado about the same hour, but it is certain that it was not the same one. * * *

A lace curtain was found about 7 miles north of the town. To the curtain was pinned a post-card that showed it came from one of the houses destroyed in town. * * *

A dispatch from Sulphur Springs, * * * 35 miles northeast of Wills Point, reports that J. B. Pickett and D. N. Rape, living 10 miles south of that place, found several pictures [photographs] which they brought to town. These are supposed to be from Wills Point. * * * There was a canceled check for a small amount on a Wills Point bank picked up * * * 2½ miles northwest of town. * * *

From Emory (it is reported) an old letter was picked up to-day * * * addrest to Wills Point, showing it had been blown from that place. [i. e., from Wills Point, 18 miles northeastward to Emory.] * * *

From Martins Mill, 23 miles south-southeast of Wills Point, it is reported that Saturday afternoon [May 25], between 4 and 5 o'clock, while the people of Martins Mill were engaged in observing a tornado raging in the forest between Martins Mill and Walton, some one noticed a funnel-shaped cloud with a smoky appearance forming about 1 mile south of that place. [Walton is 5 miles southwest of Martins Mill]. Only a glance was necessary to see that it was a tornado making its way directly toward the town. * * * It traveled in a northerly direction, passing * * * west of the resident section of the village, the business section lying directly in its course. * * *

From Canton, 13 miles south-southeast of Wills Point, it is reported that Saturday afternoon, about 5:30 o'clock, there was visible to many of the citizens a tornado cloud, formed in the southwest. The cloud seemed to divide, one portion going in an easterly direction, visiting the neighboring village, Martins Mill, situated 11 miles southeast of Canton. * * * The storm traveled on, taking a northerly course, visiting Rast Community [2 miles north of Martins Mill]. * * *

From Colfax, 19 miles southeast of Wills Point, it is reported that late Saturday afternoon a terrible tornado * * * past a few miles west of the place. * * *

Two photographs of the tornado were forwarded by Mr. D. S. Landis, in charge of the local office of the Weather Bureau at Fort Worth, Tex. They were taken by Mr. George Alford, of Wills Point.

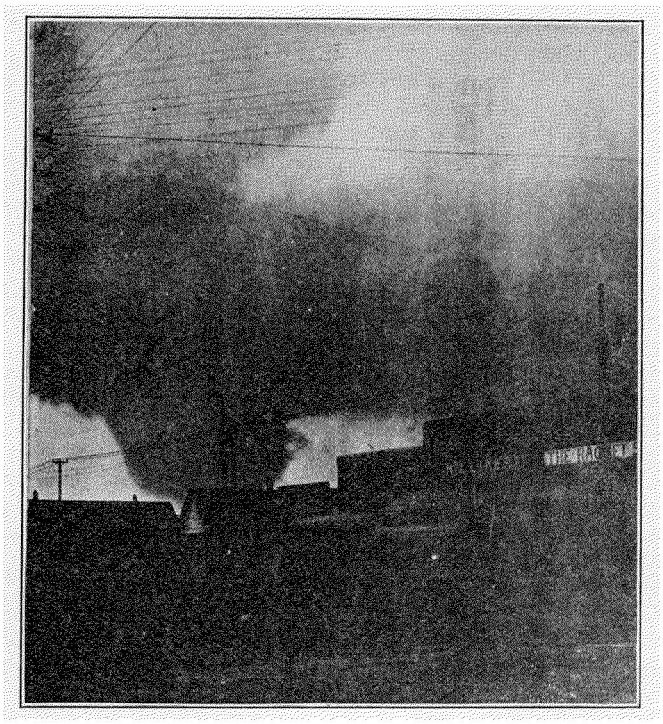

FIG. 1.—The tornado cloud of May 25, 1907, passing thru Wills Point, Tex. The camera faced east-northeast; the cloud is distant about 500 yards and is moving northeast.

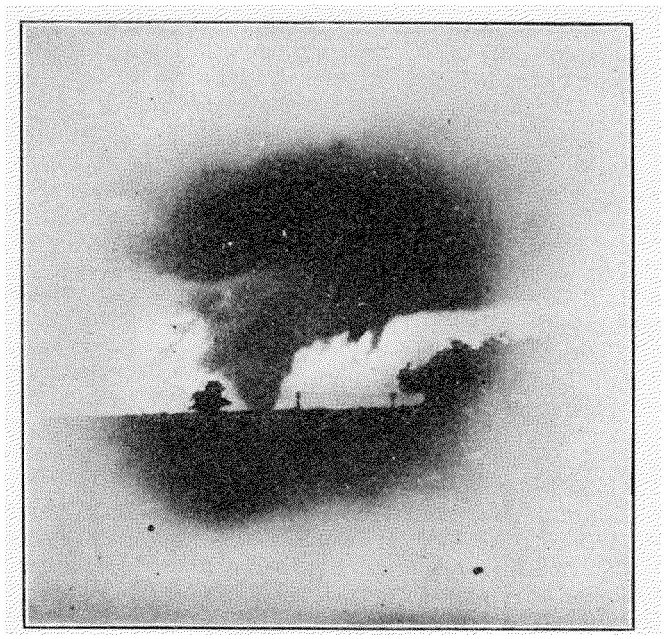

FIG. 2.—The tornado cloud of May 25, 1907, receding from Wills Point, Tex. The camera faced north-northwest; the cloud is distant about 3 miles and is moving northeast.

NOTES FROM THE WEATHER BUREAU LIBRARY.

By C. FITZHUGH TALMAN, Assistant Librarian.

The report of the Transvaal Meteorological Department for 1906, issued in 1907, shows that 375 stations in the Transvaal and 1 in Rhodesia were reporting to the central station at Johannesburg, an increase of 86 in one year. Of these 32 were equipped with barometers. All the observers except at the central station are volunteers or are attached to other government departments, and receive no remuneration for their meteorological work.

Mr. Alexander Watt has been elected meteorological secretary of the Scottish Meteorological Society to succeed the late Dr. Alexander Buchan.

A letter from Sydney Observatory states that the several state meteorological services of Australia are to be brought under the central authority of the federal government about the end of this year. Since July, 1906, the meteorological department of Sydney Observatory, which controls meteorological work thruout New South Wales, has been independent of the jurisdiction of the government astronomer, under whom it was formerly placed.

As a consequence of the great Valparaiso earthquake of last year the Government of Chile has invited Count Montessus de Ballore to establish a seismological service in that country.

The Chilean Government has just published the seventh annual volume of ter-daily observations at its coast stations.[1] We note the establishment of a station at Punta Arenas, on Magellan Strait, the observations dating from January 1, 1905. This is of special interest because several earlier series of observations at Punta Arenas, dating from 1853, have been marked by important discrepancies and the climate of this region has not yet been satisfactorily established. (See Meteorologische Zeitschrift, Bd. 8, 1891, p. 352–354). The Chilean service maintains two other stations on Magellan

[1] Anuario del Servicio meteorolójico de la Direccion del territorio marítimo. Tomo sétimo, correspondiente al año 1905. Valparaiso, 1907.